

A STUDY OF BANK CUSTOMERS' PERCEIVED USEFULNESS OF ADOPTING ONLINE BANKING

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ABSTRACT

As information technology rapidly changes the fabrics of industries in recent years, the trade of online banking has become more diversified. Specializing in unlimited, speedy and convenient services, online banking has transformed traditional banking in many countries. The managements' ability to anticipate and respond to such changes in the financial marketplace, thus, has a decisive influence on the success or failure of many retail banks. The present study, exploratory in nature, was intended to develop a comprehensive conceptual framework from which researchers could empirically examine and explain the relationship between customers' perceived usefulness of online banking and the relative advantages of online banking, its website quality, knowledge & support, information quality and customer trust in Taiwan. Multiple regressions were conducted to test the above-mentioned relationships. The statistical results show that relative advantages, trust and perceived ease of use are more important and critical to customer's intension of online banking adoption. This study further offers a marketing insight for managers to effectively deploy online system and service. In designing online banking services, software developers should pay close attention to informative content that will be, above all, perceived by customers as useful and relevant.

KEYWORDS: Online banking, technology acceptance model (TAM), perceived usefulness, perceived ease of use, relative advantage, website quality, knowledge & support, information quality, trust.

INTRODUCTION

As information technology rapidly changes the fabrics of industries in recent years, the trade of electronic banking has become more and more diversified. Specializing in unlimited, speedy and convenient services, on-line banking has transformed traditional banking in many countries (Anguelov, Hilgert & Hogarth, 2004; Lichtenstein & Williamson, 2006). The managements' ability to anticipate and respond to such changes in the financial marketplace, thus, plays a pivotal role in the success or failure of retail banks (Gan, Clemes, Limsombunchai & Weng, 2006).

There is no doubt that the web is now transforming all facets of business, and its impact on customer service has been felt on a daily basis. Pure service organizations, such as banks, provide electronic services to their customers. Because of the ever-increasing revenues generated by online services, it is essential that the organizations using this avenue get it right, lest that they risk losing a major source of income. Business firms with poor online service are guaranteed to lose their competitive edge to those who invest in carefully designing their services and are well organized and smoothly delivering (Gronfeldt & Strother, 2006).

In light of current prevalence of online banking, commercial banks in Taiwan have been trying to popularize and improve their online banking systems (Wang, Wang, Lin, & Tang, 2003). However, performance of Taiwan's banking industry has deteriorated over the last few years – foreign banks have the highest ROE and EPS (Liu, 2007). The increasing use of online banking as an additional channel of marketing banking service has significantly improved the financial performance of community banks in the U.S. (Acharya, Kagan, & Lingam, 2008). While banks are fully experienced in capturing economies of scale, developing business in international trade, increasing market prowess and creating "brand" image with the physical side of their operations, online banking presents a different set of challenges (Avery, Baradwaj, & Singer, 2008). Moreover, companies with poor online service are bound to lose its competitive edge to those who invest in making their service carefully designed, well organized and smoothly delivered (Gronfeldt & Strother, 2006). To guide our study, we utilized Davis's Technology Acceptance Model (TAM) and conducted a face-to-face survey to investigate customer's intension of online banking adoption in Taiwan banking industries.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Technology Acceptance Model (TAM): The Technology Acceptance Model (TAM) was illustrated by Davis (1989) to predict the acceptance and use of new information technology (software and information systems) within organizations. This model focus on two theoretical constructs perceived usefulness (PU) and perceived ease of use (PEOU). Both of which will influence customers' intention of using the system. Both have significantly influenced customer interaction with online banking and have in recent years been documented by studies incorporating various external variables (Pikkarainen, Pikkarainen, Karjaluoto & Pahlila, 2004; Wang et al., 2003; Cheng, Lam, & Yeung, 2006, Al-Somali, Gholami & Clegg, 2009). In the present study, the original construct perceived usefulness and perceived ease of use, along with other variables such as relative advantages, website quality, knowledge and support, information quality and trust, were adopted for an empirical test. Following is a brief review of previous studies on these constructs.

Perceived Usefulness and Perceived Ease of Use: The technology acceptance model (TAM) focuses on two theoretical construct, perceived usefulness (PU) and its perceived ease of use (PEOU) which influence consumers' intention of using the system. Davis (1989) referred to perceived usefulness as the degree to which a person believes that using a particular system will enhance his or her performance. Perceived ease of use is defined as the extent to which a person believes that using a particular system would be free of effort. Previous studies (Amin, 2007; Cheng et al., 2006; Al-Somali et al., 2009) have found that perceived ease of use has a positive effect on perceived usefulness. On the basis of these findings, the following hypothesis for investigating the customers of Taiwan's domestic banks is formulated:

Perceived Usefulness and Relative Advantages: In recent years, many researchers have found that consumers are aware of such advantages of online banking as accessibility, ease of use, abundant information, reliability and time and monetary savings, all of which are critical to the success of online banking (Cai, Yang, & Cude, 2008; Pikkarainen et al., 2004; Poon, 2008). Moreover, online-banking users are more likely to perceive relative advantages of the services (e.g., usefulness, ease of use, accessibility, amount of information, etc.), whereas the nonusers are more likely to perceive relative disadvantage of the services (e.g., security and privacy issues) (Cai et al., 2008).

Website Quality: According to Swaid and Wigand (2007), web presence supports not only traditional activities, but also new opportunities that arise from using the web as a new channel to conduct business-to-customer electronic commerce transactions. Floh and Treiblmaier (2006) noted that banks have to redesign their Web sites with an eye to enhancing usability and usefulness, because the quality of Web sites has a direct and an indirect impact on both satisfaction and trust. Lichtenstein and Williamson (2006), using a combination of individual and focus-group interviews to identify consumer adoption of internet banking in Australia, found that participants were impatient about not obtaining immediate assistance, unconfident in finding information quickly from online databases and considered on-line banking difficult to use. Floh and Treiblmaier suggested that financial institution improve their screen designs and have their navigation combined with an integrative banking system.

Knowledge & Support: If consumers lack adequate knowledge about financial services, they may not be able to make favorable decisions based on their presumptions. The lack of financial knowledge may affect an individual's or a family's capacity to make a long-term placement, which in turn results in a position that is sensitive to descents in their economy. Technological illiteracy, as with financial illiteracy, may negatively affect consumers' use of financial services in a technologically intensive context (Nilsson, 2006). During the interview of their study, Lichtenstein and Williamson (2006) found that access to required knowledge and to sources of assistance in Australia was inadequate. Such access inadequacy is experienced by the service providers-- i.e., bank personnel-- themselves. Most participants believed that this sort of access should have been made available through face-to-face contact with bank personnel, online chat or telephone. Participants also complained that many bank personnel knew very little about internet banking and how it worked. They felt that support was needed even prior to demonstrating or tutoring how to register in the form, so that a prospective user would know how internet banking worked, with suggestions including training continuously at the branches. Support is also needed for initial registration and set up. The major discovery of Lichtenstein and Williamson (2006) is that there is a need for extensive and more advanced consumer support from the bank, especially in terms of the immediate

support-oriented knowledge provided by bank personnel via interactive channels.

Information Quality: Information quality refers to the quality of report that the system produces. In the Web environment, the information is related to not only the report but also the user presentation (Ahn, Ryu & Han, 2004). The amount of information available has a positive effect on the use of online banking (Pikkarainen et al., 2004). The information provided in the virtual communities on the internet must be accurate, complete, current, customized for the user and presented in an easy-to-use format (Nelson, Todd, & Wixom, 2005). Information quality (IQ) denotes how good the system is in terms of its output. It is measured by information accuracy, completeness, currency and format of information presentation (Nelson et al., 2005).

Trust

A major concern in both money and banking is a lack of trust between customers and the banks (Schaefer, 2005). Customers require that the Website and the information it contains be trustworthy and secure. Companies that breach customers' trust may suffer a serious loss of patronage. This trust applies not only to the information obtained by the Website users but also to the information given to the company via the Website (Loiacono, 2000).

Online trust is built through belief that (1) the vendor has nothing to gain by cheating, (2) there are safety mechanisms built into the Web site, (3) there is a typical interface, and (4) the system is easy to use. In marketing and management literatures, trust is strongly associated with attitudes toward products, services and purchasing behaviors (Gefen, Karahanna & Straub, 2003).

Chang, Dillion and Hussain (2006) argued that trust and trust technology have come into the picture of the virtual environment recently to give an online user the sensation for providing opinion and assessments before a decision is made. They also indicated that the dynamic, open and convenient Web environment, while boosting business potentials and the economy, have created concerns with security, trust, privacy and risks. If these issues are not dealt with in a timely fashion, they could hamper the use of Webs. Trust has been found to be a determinant of perceived usefulness, especially in an online environment, because part of the guarantee that consumers will obtain on the usefulness of a web interface depends on the people behind the web site (Gefen, 1997).

Based on the pervious studies, in order to generate a new insight on online banking adoption among the customers of Taiwan's domestic banks, the present study proposes the framework (Figure 1) with the following hypotheses.

- H1: Perceived ease of use will be positively related to perceived usefulness.
- H2: Relative advantages will be positively related to perceived usefulness.
- H3: Website quality will be positively related to perceived usefulness.
- H4: Knowledge and support will be positively related to perceived usefulness.
- H5: Information quality will be positively related to perceived usefulness.
- H6: Trust will be positively related to perceived usefulness.

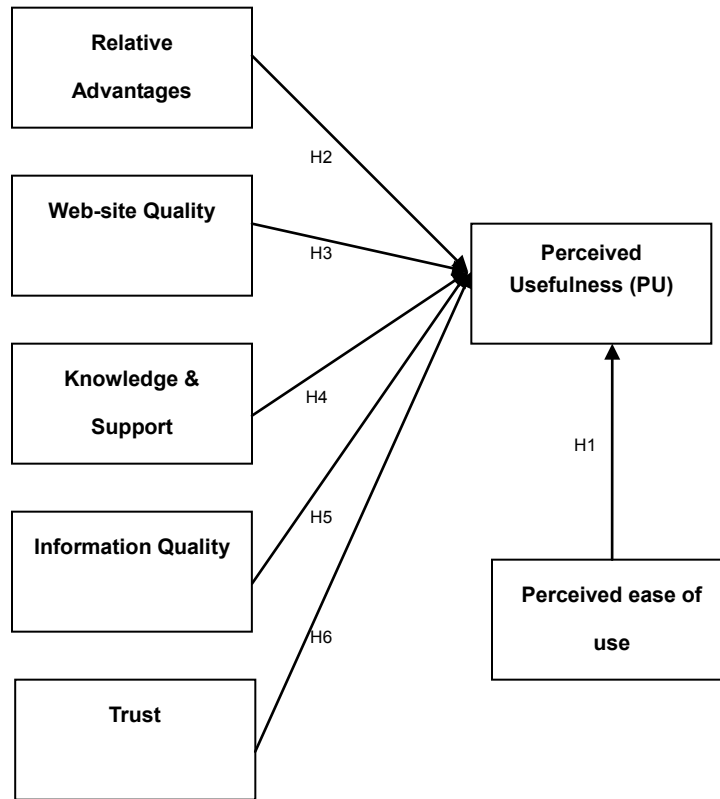
METHODOLOGY

Sample

A sample of 310 people was randomly chosen from those who were visiting the branches among Taiwan's 31 domestic banks. Those branches are separately located in the metropolitan cities-Taipei, Taichung and Kaohsiung. Ten well-trained students were collecting the data during the banking hours from October to December of 2008. To ensure the participants were customers of domestic banks, all respondents had to answer the questions, "Do you have a bank account?" and "Which bank do you have an account with?" Therefore, only those who had at least one Taiwan domestic bank account were included the sample of this study. These people worked in organizations in various industries. For response efficiency, the questionnaire was administered face-to-face, and, to ensure randomness and preclude bias, every third bank customer who visited a domestic bank in Taiwan for a transaction was selected. Poon (2008), employing a similar procedure with the banks from different states in Peninsular Malaysia, found privacy

and security to be major sources of dissatisfaction, which had adversely influenced the adoption of e-banking services.

Figure 1: Conceptual Framework



This figure shows the conceptual framework of this study with 5 variables.

In the present study, because the questionnaire was administered face-to-face, the response rate was satisfactorily high: of the 310 surveys distributed, 217 were returned, with a 70% response rate. Of the returned questionnaires, however, 23 were invalid, bringing the number of respondents to 194. Sample demographics are displayed in Table 1.

Measures

A quantitative analysis using survey was conduct in order to test the relationship between relative advantage, website quality, knowledge & support, information quality, trust and perceived usefulness of online banking. In the questionnaire all concepts were measured on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The questionnaire, developed in English, was translated into Chinese by a qualified English-Chinese translator. To ensure consistency, the questionnaire was subsequently translated back to Chinese by another translator. The result shows that there was no significant different between original English and translated English. The questionnaire, divided into two sections, consisted of 46 questions adapted from different sources. The items selected for the constructs were mainly adapted from prior studies to ensure content validity (Wang et al., 2003). Each section serves a distinctive purpose.

Table 1: Profile of Respondents

Demographics	Items	Number of Respondents	Percentage
Gender	Male	87	44.8
	Female	107	55.2
Age	Under 20	8	4.1
	21~30	74	38.1
	31~40	71	36.6
	41~50	27	13.9
	51~60	8	4.1
	Above 60	6	3.1
Educational Level	High school & under	39	20.1
	College & University	108	55.7
	Master's & Above	47	24.2

This table shows the profile of respondents. The ratio of the male and female respondents is 44.8%, versus 55.2%. The numbers of the 21~30 year-old respondents and the 31~40-year-olds are about equal. These two groups constitute a majority of the respondents. In terms of educational level, most respondents (55.7%) were college and university graduated, followed by Master's and above (24.2%) and high school and under (20.1%).

Section 1: This section attempts to measure the agreement among respondents regarding their perspectives in adopting online banking. Relative advantages (RA), with five items, was adapted from Poon (2008), and Alsajjanan and Dennis (2006). Website quality (WQ), with ten items, was adapted from Floh and Treiblmaier (2006) and Loiacono (2000). Knowledge and support (KS), with eight items, was adapted from Poon (2008) and Ahn et al. (2004). Information quality (IQ), with seven items, was adapted from Ahn et al. (2004) and Liao and Wang (2007). Trust (T), with eight items, was adapted from Swaid and Wigand (2007), Pikkariainen et al. (2004) and Poon (2008). Perceived usefulness (PU), with four items, was adapted from Davis (1989) and Liao and Wang (2007). Perceived ease of use (PEOU), with three items, was adapted from Davis (1989) and Venkatesh and Davis(2000).

A pre-test was conducted as part of instrument refinement to establish reliability and validity of the data-collecting scales. A sample of fifty people, working in organizations in various industries, was randomly chosen from the Kaohsiung city. All participants were bank customers. Because some respondents in this pilot test requested clarification of Questions RA1, WQ5, WQ10, and KS5, subsequent modifications were made to improve the accuracy of the questionnaire.

RESULTS AND DISCUSSION

The results of multiple regression analysis and the model summary, presented in Table 1, indicate that the overall model of the six Independent Variables is significantly related to customer satisfaction [Adjusted $R^2 = .62$, $F(6, 167) = 44.59$, $p < .05$]. These results, therefore, support the hypothesis that the six dimensions are significantly correlated with perceived usefulness of online banking. In addition, the statistical results also show that relative advantages, trust and perceived ease of use are particularly significantly and positively related to customers' perceived usefulness. These statistical results led to the development of a multiple regression function using beta weight, as shown in Table 4.

Table 2: Regression Results

	Unstandardized Coefficients		Standardize Coefficients	<i>t</i>	<i>Sig.</i>
	β	Std. Error	β		
(Constant)	.66	.37		1.78	.08
RA	.23	.06	.21	3.54	.00**
WQ	.00	.09	.00	.02	.97
KS	-.04	.09	-.03	-.45	.65
IQ	.10	.09	.08	1.07	.29
T	.22	.07	.22	3.06	.00**
PEOU	.43	.07	.46	6.57	.00***

*This table shows the regression results. P=significance: *P < .05, **P < .01, ***P < .001. RA, T, PEOR are statistically significant, indicating that these variables have a positive effect on perceived usefulness. The general model for the present study is deployed as follows: Y (Perceived usefulness) = 0.212 X (Relative advantage) + 0.001 (Website quality) - 0.031 X (Knowledge & support) + 0.078 X (Information quality) + 0.215 X (Trust) + 0.459 (Perceived ease of use).*

CONCLUSION AND RECOMMENDATIONS

The results of the regression analysis conducted on the six factors indicate that relative advantages, trust and perceived ease of use were the most influential factors explaining perceived usefulness of online banking services. This finding suggests that consumers use online banking for the benefits it provides in comparison to other banking delivery channels. Perceived ease of use (PEOU) was almost statistically significant in the model, a finding in line with other TAM studies (e.g., Davis, 1989; Cheng et al., 2006; Al-Somali et al., 2009), which found that PEOU has an impact on PU. This association is explained with the fact that as users are convinced with perceived ease of use, its impact becomes instrumental. In other words, PEOU impinges on acceptance through PU.

A second influential factor in the present study indicates that as consumers perceive the relative advantages of online banking, they will become more informed about the benefits it offers. Trust was also found to exert a positive effect on perceived usefulness of the online banking system. Results from previous studies echoed this finding. For example, Gefen (1997) found trust to be one of the determinants of perceived usefulness, especially in an online environment, because part of the usefulness guarantee that consumers obtain from the web interface depends on their confidence with people behind the web site.

As society moves into the era of new technologies and as e-services become more widely accepted, it will be important that banks meet the needs of consumers. In order to cultivate consumer internet-banking demands, banks must make key improvements that address consumer concerns.

CONTRIBUTION AND LIMITATIONS

The present study is one of the first academic studies to incorporate RA, WQ, KS, IQ and T into TAM. What makes it stand out is its focus on the viewpoints of all bank customers, whether they were users or non-users of online banking. The results of this study provide managers with information pertaining to the planning of online banking Web sites and service selection. In designing online banking services, software developers should pay close attention to informative content that will be, above all, perceived by customers as useful and relevant.

Although for most part the results are considered statistically significant, the present study has several limitations that affect the reliability and validity of the findings. First of all, the regression model developed had relatively low coefficients. Second, a convenience sampling method, adopted in this study to selectively gauge a mass of viewpoints of bank customers, weakens the study's generalization. Finally, the measures perhaps are not sufficient to explain why bank customers decided to use or not to use the system. New measures will need to be included in future research that ascertains these connections.

REFERENCES

- Acharya, R. N., Kagan, A., & Lingam, R. S. (2008). Online banking application and community bank performance. *The International Journal of Bank Marketing* , 26 (6), 418-439.
- Ahn, T., Ryu, S., & Han, I. (2004). The impact of the online and offline features on the user acceptance of internet shopping malls. *Electronic Commerce Research and Application* , 3, 405-420.
- Alsajjan, B. A., & Dennis, C. (2006). The impact of trust on acceptance of online banking. In *European Association of Education and Research in Commerical Distribution* .
- Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation* , 29, 130-141.
- Amin, H. (2007). Internet banking adoption among young intellectuals. *Journal of Internet Banking and Commerce* , 12 (3), 1-13.
- Anguelov, C. E., Hilgert, M. A., & Hogarth, J. M. (2004). *U.S. Consumers and Electronic Banking 1995-2003*. Federal Reserve Bulletin.
- Avery, A. E., Baradwaj, B. G., & Singer, D. D. (2008). An examination of Hofstede's cultural factors in explanation of differences in citibank international retail banking web sites. *Journal of Business & Economics Studies* . , 14 (2), 73-90.
- Cai, Y., Yang, Y., & Cude, B. (2008). Inconsistencies in US consumers' attitudes toward and use of electronic banking. *Journal of Financial Services Marketing* , 13 (2), 150-163.
- Chang, E., Dillion, T., & Hussain, F. K. (2006). *Trust and reputation for service environments: Technologies for building business intelligence and consumer confidence*. Chichester, England: John Wiley & Sons Ltd.
- Cheng, T. C., Lam, D. Y., & Yeung, A. C. (2006). Adoption of internet banking: an empirical study in Hong Kong. *Decision Support System* , 42, 1558-1572.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly* , 13 (3), 319-340.
- Floh, A., & Treiblmaier, H. (2006). What keeps the e-banking customer loyal? A multigroup analysis of the moderating role of consumer characteristics one-loyalty in the financial service industry. *Journal of Electronic Commerce Research* , 7 (2), 97-109.
- Gan, C., Clemens, M., Limsombunchai, V., & Weng, A. (2006). A logit analysis of electronic banking in New Zealand. *International Journal of Bank Marketing* , 24 (6), 360-383.
- Gefen, D. (1997). Building users' trust in freeware providers and the effects of this trust on users' perceptions of usefulness, ease of use and intended use of freeware. *Unpublished doctoral dissertation* . Georgia: Georgia State University.
- Gefen, D., Karahanna, E., & Straub. (2003). Trust and TAM in online shopping: an integrated model. *MIS Quarterly* , 27 (1), 51-90.
- Gronfeldt, S., & Strother, J. B. (2006). *Service Leadership: The quest for competitive advantage*. Thousand Oaks, CA: Sage Publications Ltd.
- Liao, Z., & Wong, W. K. (2007). *The determinants of customer interaction with internet-enabled e-banking services*. The department of Economics. Singapore: National University of Singapore.
- Lichtenstein, S., & Williamson, K. (2006). Understanding Consumer Adoption of Internet Banking: An

Interpretive Study in the Australian Banking Context. *Journal of Electronic Commerce Research* , 7 (2), 50-66.

Liu, H. Y. (2007). Development of a framework for customer relationship management (CRM) in the banking industry. *International Journal of Management* , 24 (1), 15-32.

Loiacono, E. T. (2000). WEBQUALTM: A web site quality instrument. *Unpublished doctoral dissertation* . Athens, Georgia: University of Georgia.

Nelson, R. R., Todd, P. A., & Wixom, B. H. (2005). Antecedents of information and system quality: an empirical examination within the context of data warehousing. *Journal of Management System* , 21 (4), 199-235.

Nilsson, D. (2006). Knowledge acquisition and usage behavior in internet banking. In A. Lindstrand, D. D. Sharma, & J. Johansson (Eds.), *Managing Customer Relationships on the Internet* (pp. 99-119). New York: Elsevier Ltd.

Pikkarainen, T., Pikkarainen, K., Karjauoto, H., & Pahlila, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet Research* , 14 (3), 224-235.

Poon, W. C. (2008). Users' adoption of e-banking services: the Malaysian perspective. *Journal of Business & Industrial Marketing* , 3 (1), 59-69.

Schaefer, G. K. (2005). *Money, trust, and banking: An integrated approach to monetary theory and banking theory*. New York: Palgrave Macmillan.

Swaid, S., & Wigand, R. T. (2007). Key Dimensions of E-commerce Service Quality and Its Relationships to Satisfaction and Loyalty. *eMergence: Merging and Emerging Technologies, Process, and Institutions*. Bled, Slovenia: 20th Bled eConference.

Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science* , 46 (2), 186-204.

Wang, Y. S., Wang, Y. M., Lin, H. H., & Tang, T. I. (2003). Determinants of user acceptance of Internet banking: an empirical study. *International Journal of Service* , 14 (5), 501-519.

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